

Claims

1. A test apparatus to check the exposure quality of an exposed film, in particular of a motion film, comprising:
 - a test pattern holder (13) for holding a test pattern (15) of the exposed film;
 - a reference pattern (17) which has at least one reference mark (33, 35, 37, 39) and is provided in superimposition with respect to the test pattern (15) held by the test pattern holder;
 - a light transmitter (11) for the illumination of the test pattern (15) held by the test pattern holder and of the reference pattern (17) superimposed herewith;
 - a light receiver (19) for the reception of the light transmitted through the reference pattern and through the test pattern and for the generation of corresponding electrical received signals; and
 - an evaluation device (21) for the evaluation of the received signals of the light receiver (19) with respect to at least one quality parameter.
2. A test apparatus in accordance with claim 1, characterized in that the reference pattern (17) and the test pattern (15) held by the test pattern holder (13) are provided in a pre-determined relative position to one another.

3. A test apparatus in accordance with claim 1, characterized in that the reference pattern (17) is arranged in a fixed position relative to the test pattern holder (13).

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4. A test apparatus in accordance with claim 1, characterized in that the test pattern holder (13) has at least two blocking grip pins (29) for the holding of the test pattern (15) and/or of the reference pattern (17) in a pre-determined position.

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5. A test apparatus in accordance with claim 4, characterized in that the test pattern (15) and/or the reference pattern (17) has/have at least two bores (31, 41') for the reception of one blocking grip pin (29) each.

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6. A test apparatus in accordance with claim 1, characterized in that the test pattern holder (13) has two frame sections (23) between which the test pattern (15) and/or the reference pattern (17) can be enclosed.

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7. A test apparatus in accordance with claim 1, characterized in that the test pattern holder (13) has the form of a transparency mount.

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8. A test apparatus in accordance with claim 1, characterized in that the reference pattern (17) has a transparent plate to whose surface the reference mark has been applied.

9. A test apparatus in accordance with claim 1, characterized in that the reference pattern (17) comprises a glass pane onto which the reference mark has been vapor deposited.
- 5 10. A test apparatus in accordance with claim 1, characterized in that at least one, preferably three or four, positional markings (33) are provided as the reference mark.
- 10 11. A test apparatus in accordance with claim 1, characterized in that a gray scale pattern (35) of a plurality of gray scales is provided as the reference mark.
- 15 12. A test apparatus in accordance with claim 1, characterized in that at least one reference edge (37) is provided as the reference mark whose resolution is higher than the resolution of the light receiver (19).
- 20 13. A test apparatus in accordance with claim 1, characterized in that a homogeneity measuring field (39) is provided as the reference mark.
14. A test apparatus in accordance with claim 1, characterized in that the test pattern (15) is exposed in accordance with a pre-determined pattern.
- 25 15. A test apparatus in accordance with claim 1, characterized in that the test pattern (15) has at least one test mark.

16. A test apparatus in accordance with claim 15, characterized in that there is provided as a test mark: a positional marking (43), an edge pattern (45), a gray scale pattern (49), a color space conversion measuring field (51), a scattered light test field (53), a homogeneity measuring field (55), an exposure linearity measuring field (57), and/or an RMS measuring field (47).
17. A test apparatus in accordance with claim 1, characterized in that the light receiver (19) is made for the generation of the received signals in accordance with different spectral sensitivities, in particular in accordance with a sensitivity to red, green and blue.
18. A test apparatus in accordance with claim 1, characterized in that the light receiver (19) is made for the scanning of the test pattern (15) line by line.
19. A test apparatus in accordance with claim 1, characterized in that the evaluation device (21) has an analog/digital converter for the conversion of the received signals into digital values.
20. A test apparatus in accordance with claim 1, characterized in that the light transmitter (11), the light receiver (19) and the evaluation device (21) are part of a digital scanner device.
21. A test apparatus in accordance with claim 1, characterized in that there are evaluated as quality parameters: the freedom from distortion of the optical exposure system of the exposure apparatus used, the convergence of the exposure ray of the exposure apparatus

used, the positional accuracy of the exposure apparatus used, the modulation transfer function of the exposure apparatus used, the linearity of the exposure intensity of the exposure apparatus used, the homogeneity of the exposure of the exposure apparatus used, the freedom from scattered exposure light, the RMS noise, the signal to noise ratio and/or the characteristic line of the exposure modulation of the exposure apparatus used.

22. A test method for the checking of the exposure quality of an exposed film, in particular of a motion film, in particular comprising a test apparatus in accordance with claim 1, wherein:
- a test pattern (15) of the exposed film and a reference pattern (17), which has at least one reference mark (33, 35, 37, 39), are superimposed on one another;
 - the arrangement of the test pattern (15) and of the reference pattern (17) superimposed herewith is illuminated;
 - the light transmitted through the test pattern (15) and through the reference pattern (17) is converted into electrical received signals; and
 - the received signals are evaluated with respect to at least one quality parameter.
23. A test method in accordance with claim 22, characterized in that the test pattern is exposed in accordance with a pre-determined pattern prior to the superimposition of the test pattern (15) and of the reference pattern (17).

24. A test method in accordance with claim 22, characterized in that the test pattern (15) has at least one test mark (43, 45, 47, 49, 51, 53, 55, 57).